

CLAIMS:

1. A multiuse laundry cleaning device in a solid state comprising a homogeneous quantity of cleaning agent in solid form configured to be disposed within a laundry cleaning machine tub and to dissolve and release a substantially consistent quantity of cleaning agent over a plurality of laundry wash and rinse cycles.
2. The multiuse laundry cleaning device according to claim 1, wherein the cleaning agent comprises a gas-releasing component, a solubility control component to limit the solubility of the cleaning agent, an alkalinity agent as a pH regulator, a water softener to solvate metal ions in a solution of water, and an optical brightener, wherein the solubility control component is present in an amount sufficient to cause the multiuse laundry cleaning device to dissolve in water and release a substantially consistent quantity of cleaning agent over a plurality of laundry wash and rinse cycles.
3. The multiuse laundry cleaning device according to claim 1, wherein the gas-releasing component is selected from the group consisting of carbonates, bicarbonates, perborates, percarbonates, and mixtures thereof and the solubility control component is potassium silicate, the alkalinity agent as a pH regulator.
4. The multiuse laundry cleaning device according to claim 1, wherein the gas-releasing component is present in an amount from 20% to 60% by weight, wherein the solubility control component is present in an amount from 20% to 60% by weight, wherein the water softener is present in an amount from 0.5% to 20% by weight, wherein the alkalinity agent is present in an amount from 0.5% to 20% by weight, and wherein the optical brightener is present in an amount from 0.5% to 8% by weight.
5. The multiuse laundry cleaning device according to claim 4, wherein the cleaning agent further comprises a fragrance component present in an amount from about 0.5 to 15 % by weight.
6. The multiuse laundry cleaning device according to claim 4, wherein the cleaning agent further comprises an anti-redeposition component present in an amount from about 0.5% to 10% by weight.

7. The multiuse laundry cleaning device according to claim 2, wherein the water softener is selected from the group consisting of ion exchange particles and salts of weak acids.

8. The multiuse laundry cleaning device according to claim 2, wherein the water softener is a natural or synthetic zeolite.

9. The multiuse laundry cleaning device according to claim 3, wherein the gas-releasing component is sodium perborate monohydrate.

10. The multiuse laundry cleaning device according to claim 3, wherein the gas-releasing component is sodium percarbonate.

11. The multiuse laundry cleaning device according to claim 3, wherein the gas-releasing component is sodium bicarbonate.

12. The multiuse laundry cleaning device according to claim 3, wherein the gas-releasing component is sodium carbonate.

13. The multiuse laundry cleaning device according to claim 3, wherein the alkalinity agent is selected from the group consisting of an alkali hydroxide, alkali hydride, alkali oxide, alkali sesquicarbonate, alkali carbonate, alkali phosphate, alkali borate, alkali salt of mineral acid, alkali amine, alkaloid, alkali cyanide, and mixtures thereof.

14. The multiuse laundry cleaning device according to claim 3, wherein the alkalinity agent is an alkali hydroxide.

15. The multiuse laundry cleaning device according to claim 3, wherein the alkalinity agent is present in an amount sufficient to give a solution of the composition a pH greater than 7.

16. The multiuse laundry cleaning device according to claim 3, wherein the alkalinity agent is present in an amount sufficient to give a solution of the composition a pH from about 7 to about 10.5.

17. The multiuse laundry cleaning device according to claim 1, further comprising a porous covering or bag disposed around the solid cleaning agent.

18. The multiuse laundry cleaning device according to claim 17, wherein the porous covering or bag conforms to the size of the solid cleaning agent as the cleaning agent shrinks in size due to dissolution of cleaning agent.

19. The multiuse laundry cleaning device according to claim 17, wherein the porous, covering or bag comprises a pliable fabric material.

20. The multiuse laundry cleaning device according to claim 17 wherein the porous covering or bag is made of multiple layers of material.

21. The multiuse laundry cleaning device according to claim 17 wherein the porous covering or bag comprises:

- an outer layer made of a mesh material;
- an inner layer made of a mesh material; and
- a middle layer made from a padding material.

22. The multiuse laundry cleaning device according to claim 21 wherein the padding material used to make the middle layer is selected from the group consisting of porous foam and ruffled netting.

23. The multiuse laundry cleaning device according to claim 17 wherein the porous covering or bag is configured to perform one or more functions selected from the group consisting of: retaining fragrance with the cleaning agent; creating more sudsing during agitation of the washing machine; creating drag in the water to quiet any contact with the cleaning agent and the tub of the washing machine; retaining fragments of the cleaning agent;

providing a more consistent dissolution rate of the cleaning device over multiple cycles; and creating a barrier between the cleaning agent and the laundry articles.

24. The multiuse laundry cleaning device according to claim 1, further comprising a structure disposed within the quantity of cleaning agent to signal when to replace the cleaning device.

25. The multiuse laundry cleaning device according to claim 1, wherein the cleaning agent is in the form of a ball.

26. The multiuse laundry cleaning device according to claim 1, wherein the cleaning agent in solid form dissolves and releases a substantially consistent quantity of cleaning agent over from about 10 to 40 laundry wash or rinse cycles.

27. The multiuse laundry cleaning device according to claim 2, wherein the gas-releasing component is sodium perborate monohydrate present in an amount from 42% to 52% by weight, wherein the solubility control component is potassium silicate present in an amount from 35% to 45% by weight, wherein the water softener is a zeolite present in an amount from 1% to 5% by weight, wherein the alkalinity agent is sodium hydroxide present in an amount from 1% to 5% by weight, and wherein the optical brightener is present in an amount from 0.5% to 3% by weight.

28. The multiuse laundry cleaning device according to claim 27, wherein the cleaning agent further comprises:

a fragrance component present in an amount from about 1 to 5 % by weight;
and

an anti-redeposition component present in an amount from about 0.5 to 3% by weight.

29. A method of providing laundry cleaning agent to a laundry cleaning machine comprising:

obtaining a multiuse laundry cleaning device in a solid state comprising a homogeneous quantity of cleaning agent in solid form comprising a gas-releasing component, a solubility control component to limit the solubility of the cleaning agent, an alkalinity agent as a pH regulator, a water softener to solvate metal ions in a solution of water, and an optical brightener, wherein the solubility control component is present in an amount sufficient to cause the multiuse laundry cleaning device to dissolve in water and release a substantially consistent quantity of cleaning agent over a plurality of laundry wash and rinse cycles; and

depositing the laundry cleaning device within the laundry cleaning machine tub under conditions such that the laundry cleaning device is exposed to water from the plurality of laundry wash and rinse cycles.

30. The method according to claim 29, wherein the gas-releasing component is selected from the group consisting of carbonates, bicarbonates, perborates, percarbonates, and mixtures thereof and the solubility control component is potassium silicate, the alkalinity agent as a pH regulator.

31. The method according to claim 29, further comprising the step of disposing the solid cleaning agent within a porous covering or bag.

32. The method according to claim 31, wherein the porous, covering or bag comprises a pliable fabric material.

33. The method according to claim 31, wherein the porous covering or bag conforms to the size of the solid cleaning agent as the cleaning agent shrinks in size due to dissolution of cleaning agent.

34. The multiuse laundry cleaning device according to claim 31 wherein the porous covering or bag comprises:

an outer layer made of a mesh material;
an inner layer made of a mesh material; and

a middle layer made from a padding material.

35. The multiuse laundry cleaning device according to claim 34 wherein the padding material used to make the middle layer is selected from the group consisting of porous foam and ruffled netting.

36. The method according to claim 29, wherein the cleaning agent in solid form further comprises a structure disposed within the quantity of cleaning agent to signal when to replace the cleaning device.

37. The method according to claim 29, wherein the cleaning agent in solid form is in the form of a ball.

38. The method according to claim 29, wherein the gas-releasing component is present in an amount from 20% to 60% by weight, wherein the solubility control component is present in an amount from 20% to 60% by weight, wherein the water softener is present in an amount from 0.5% to 20% by weight, wherein the alkalinity agent is present in an amount from 0.5% to 20% by weight, and wherein the optical brightener is present in an amount from 0.5% to 8% by weight.

39. The method according to claim 38, wherein the cleaning agent further comprises:

a fragrance component present in an amount from about 0.5 to 15 % by weight; and

an anti-redeposition component present in an amount from about 0.5% to 10% by weight.

40. The method according to claim 29, wherein the gas-releasing component is sodium perborate monohydrate present in an amount from 42% to 52% by weight, wherein the solubility control component is potassium silicate present in an amount from 35% to 45% by weight, wherein the water softener is a zeolite present in an amount from 1% to 5% by weight, wherein the alkalinity agent is sodium hydroxide present in an amount from 1% to

5% by weight, and wherein the optical brightener is present in an amount from 0.5% to 3% by weight.

41. A multiuse laundry cleaning device in a solid state comprising:
a homogeneous quantity of cleaning agent in solid form, the cleaning agent comprising:

a gas-releasing component, wherein the gas-releasing component is sodium perborate monohydrate present in an amount from 42% to 52% by weight;

a solubility control component to limit the solubility of the cleaning agent, wherein the solubility control component is potassium silicate present in an amount from 35% to 45% by weight, and wherein the solubility control component is present in an amount sufficient to cause the multiuse laundry cleaning device to dissolve in water and release a substantially consistent quantity of cleaning agent over a plurality of laundry wash and rinse cycles.

a water softener to solvate metal ions in a solution of water, wherein the water softener is a zeolite present in an amount from 1% to 5% by weight;

an alkalinity agent as a pH regulator, wherein the alkalinity agent is sodium hydroxide present in an amount from 1% to 5% by weight;

an optical brightener, wherein the optical brightener is present in an amount from 0.5% to 3% by weight;

a fragrance component present in an amount from about 1 to 5 % by weight; and

an anti-redeposition component present in an amount from about 0.5 to 3% by weight; and

a porous covering or bag disposed around the solid cleaning agent.

42. The multiuse laundry cleaning device according to claim 41, wherein the porous covering or bag conforms to the size of the solid cleaning agent as the cleaning agent shrinks in size due to dissolution of cleaning agent.

43. The multiuse laundry cleaning device according to claim 41 wherein the porous covering or bag is made of multiple layers.

44. The multiuse laundry cleaning device according to claim 38 wherein the porous covering or bag comprises:

- an outer layer made of a mesh material;
- an inner layer made of a mesh material; and
- a middle layer made from a padding material.

45. The multiuse laundry cleaning device according to claim 44 wherein the padding material used to make the middle layer is selected from the group consisting of porous foam and ruffled netting.